

REMARKS

Claims 23-34 are pending in the application. Claims 23-25 were rejected under 35 U.S.C. §102(b), as described in paragraph 4 of the Office Action. Claims 27-31 were rejected under 35 U.S.C. §103(a), as described in paragraph 6 of the Office Action. Claims 23 and 17 are the only independent claims.

Attached hereto are replacement formal drawings for figures 1-38. The replacement formal drawings have eliminated the page numbering thereof. Accordingly, it is respectfully requested that the objection to the drawings be withdrawn.

Applicants respectfully submit that claims 23-34 are patentable over the prior art of record for the following reasons.

One aspect of an embodiment the present invention is drawn to a multi-directional input device that includes conductors, for example items 18C and 18D as illustrated in Fig. 2, on a ring-shaped resistance element, for example item 18 as illustrated in Fig. 2. Furthermore, in this particular embodiment, insulating sections, for example items 24A and 24B as illustrated in Fig. 2, are formed on a first conductive layer and a second conductive layer, for example items 22 and 23, respectively, as illustrated in Fig. 2, that correspond to the electrodes, respectively. Still further, the circumferential widths of the two insulating sections are narrower than the circumferential widths of the electrodes. Accordingly, a microprocessor, for example item 25 as illustrated in Fig. 4, is able to recognize a tilt angle of a knob, for example item 14 of Fig. 2, at an angle ranging from 0 degrees to 360 degrees by detecting an output voltage from the first conductive layer, for example item 22, and the second conductive layer, for example item 23.

The above-identified structure in accordance with one aspect of the present invention provides accurate detection with a high resolution of a tilt angle of the knob. In other words the structure provides high resolution of input directions.

In accordance with a second aspect of an embodiment of the present invention, insulating spacers, for example item 16B as illustrated in Fig. 1, having a predetermined thickness are disposed, for example on printed circuit substrate 13 as illustrated in Fig. 1, such that the spacers correspond to an internal ring and external ring of a resistance element, for example layer 18 as illustrated in Fig.

1, such that parts of the resistance element are spaced from the substrate at a predetermined distance. In accordance with one embodiment of the present invention, two spacers, for example item 16B, ensure stable spacing of both internal and external periphery of the ring-shaped resistance element, for example layer 18.

The ring-shaped resistance element layer of each of claims 23 and 27 is required to have “**a plurality of electrodes disposed thereon.**” Further, the ring-shaped conductive section of each of claims 23 and 27 is required to comprise “**a plurality of conductive layers insulated from each other by insulating sections, wherein said insulating sections oppose said plurality of electrodes.**”

It is respectfully submitted that neither Asher nor Emery, either singly or in combination teaches the above-identified limitations.

As illustrated in Fig. 6 of Asher, the reference discloses a resistor ring 12, which might be considered as a ring-shaped resistance element, and a conductive ring 21, which might be considered a conductive section. Nevertheless, Asher fails to teach or suggest an electrode **disposed on** the resistor ring 12. On the contrary, Asher teaches conductive traces 18 separated from resistor ring 12. Accordingly, Asher additionally fails to teach or suggest insulating sections that correspond to a plurality of electrodes disposed on resistor ring 12. Accordingly, Asher fails to teach: a ring-shaped resistance element layer formed on an insulating substrate, the ring-shaped resistance element layer having a plurality of electrodes disposed thereon; or a ring-shaped conductive section comprising a plurality of a plurality of conductive layers insulated from each other by insulating sections, wherein the insulating sections oppose the plurality of electrodes, as required in independent claims 23 and 27.

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed in a prior art reference, *Akzo N.V. v. U.S. Int'l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), based on the foregoing, it is clear that Asher does not anticipate claim 23 and 27.

Because claims 24-25 and 28-31 are dependent upon claims 23 and 27, respectively, and therefore include all the limitations thereof, it is additionally respectfully submitted that claims 24-25 and 28-31 are novel over Asher within the meaning of 35 U.S.C. § 102.

It is respectfully submitted that Emery fails to teach the shortcomings of Asher such that a combination of the teachings of Asher in view of Emery would teach that which is required in independent claims 23 and 27.

As discussed in paragraph 6 of the Office Action, Emery is relied upon for teaching a casing 30 for housing “the switch and exposing the knob,” and for having “a flange 22 and a resilient portion 31.”

While not admitting to the asserted teachings of Emery as discussed in paragraph 6 of the Office Action, it is respectfully submitted that Emery fails to teach: a ring-shaped resistance element layer formed on an insulating substrate, the ring-shaped resistance element layer having a plurality of electrodes disposed thereon; or a ring-shaped conductive section comprising a plurality of a plurality of conductive layers insulated from each other by insulating sections, wherein said insulating sections face to said plurality of electrodes, as required in independent claim 23.

Because neither Asher nor Emery teach: a ring-shaped resistance element layer formed on an insulating substrate, the ring-shaped resistance element layer having a plurality of electrodes disposed thereon; or a ring-shaped conductive section comprising a plurality of a plurality of conductive layers insulated from each other by insulating sections, wherein the insulating sections oppose the plurality of electrodes, as required in independent claims 23 and 27, it is respectfully submitted that a combination of the teachings of Asher in view of Emery would additionally fail to teach that which is required in independent claims 23 and 27.

Furthermore, it is respectfully submitted that because neither Asher nor Emery teach insulating sections opposing the plurality of electrodes, as required in independent claims 23 and 27, the prior art additionally fails to teach that the widths of the insulating sections are narrower than those of the electrodes, as required in each of claims 24 and 28. For this additional reason, it is respectfully submitted that claims 24 and 28 are patentable over the prior art of record.

Furthermore, as claims 26 and 32 are dependent upon claims 23 and 27, respectively, it is respectfully submitted that claims 26 and 32 are allowable over the prior art of record and it is requested that claims 26 and 32 be rejoined.


Accordingly, it is respectfully submitted that claims 23 and 27, and dependent claims 24-26 and 28-32, are patentable over the combination of Asher in view of Emery within the meaning of 35 U.S.C. § 103.

Having fully and completely responded to the Office Action, Applicants submit that all of the claims are now in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

Respectfully submitted,

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